

COMMAND HISTORICAL REPORT
1988
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U.S. NAVAL MEDICAL RESEARCH UNIT NO. 2
APO SAN FRANCISCO 96528-5000

JAMES C. COOLBAUGH, CAPT, MSC, USN
COMMANDING OFFICER

1988

COMMAND HISTORY

NAVAL MEDICAL RESEARCH UNIT NO. 2

MANILA, REPUBLIC OF THE PHILIPPINES



CAPTAIN JAMES C. COOLBAUGH, MSC, USN

COMMANDING OFFICER

Commanding Officers and Dates of Command

	From	To
Captain Robert A. Phillips	13 Sep 1955	30 Oct 1965
Captain Raymond H. Watten	30 Oct 1965	29 Jul 1974
Captain P.F. Dirk Van Peenen	29 Jul 1974	1 Oct 1976
Captain Kurt Sorensen	1 Oct 1976	1 Jul 1980
Captain William H. Schroeder	1 Jul 1980	20 Jan 1984
Captain Vernon D. Schinski	20 Jan 1984	5 Jul 1985
Captain Larry W. Laughlin	5 Jul 1985	8 Jul 1988
Captain James C. Coolbaugh	8 Jul 1988	

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PART I

COMMAND MISSION

AND

ORGANIZATION

HISTORY OF THE U.S. NAVAL MEDICAL RESEARCH UNIT NO. 2

The U.S. Naval Medical Research Unit No. 2 (NAMRU-2) had its beginnings under the Rockefeller Institute on Guam during World War II (1942-1946). Its primary function was, as it remains today, to study infectious diseases of potential military significance in Asia. In 1955, the Unit was reestablished in Taipei, Taiwan, Republic of China, where it functioned with distinction for twenty-four years. As a leading biomedical laboratory in Asia, NAMRU-2 was frequently requested to provide assistance in other Asian countries for training and for expertise in epidemiology, treatment and control of various infectious disease problems. These collaborative efforts led to the establishment of a detachment in Vietnam (1965), a detachment in Jakarta, Indonesia (1970) and finally to the transfer of the parent laboratory to Manila, Republic of the Philippines (1979).

Jakarta

NAMRU-2 scientists first visited Jakarta, in 1963, to study arboviral diseases. In 1968, an outbreak of Bubonic plague in Central Java prompted the Indonesian government to request assistance. NAMRU-2 joined a U.S. Public Health Service team and together they brought the outbreak under control and established eradication and surveillance programs. Following the success of these programs, the Indonesian health authorities requested that NAMRU-2 establish a permanent research laboratory in Indonesia. On 16 January 1970, negotiations were completed and a permanent detachment (NAMRU-2 DET) was established in Jakarta. Early research efforts included a study of leptospirosis in South Sumatra; serological surveys and hemoglobin determinations in Bali and Makassar; and zoonosis, filariasis and biomedical surveys in Sulawesi.

During the late 70's a new primate filarid parasite (*Wuchereria kalimantani*) was discovered. This species is very similar to the human parasite *W. bancrofti*, and its discovery opened the doors to the long sought after animal model for bancroftian filariasis. During the next few years this animal model system was fully developed and stands as one of the major accomplishments of the laboratory.

The 80's were ushered in with the signing of a new five-year working agreement with NIHRD which identified manpower development, institutional building and research and surveillance of infectious diseases as NAMRU goals. The tone of research began to change from broad surveillance to focusing on specific questions about identified diseases entities. Typhoid fever was noted to have a specific subset of patients with cerebral manifestations and a very high fatality rate. A prototype double blind randomized clinical trial lead to the new discovery that high dose dexamethasone dramatically reduced mortality in severe typhoid fever. Large

steps were taken in the discovery of the pathogenesis of typhoid fever which pointed to toxic agents produced by the macrophage immune cell.

Malaria became a prominent diseases research area of the 80's. Drug resistance mapping was completed, *in vitro* continuous malaria culturing was established, cerebral malaria was clinically defined and major efforts were made to discover the mechanism of natural immunity to malaria. It was noted that the mechanism of malaria immunity in central Indonesia and northern Africa were different, an observation that may have great impact on the current development of a malaria vaccine. Simultaneously, studies in tropical splenomegaly syndrome (chronic malaria) revealed that this subset of patients produced a serum factor that is toxic to suppressor T lymphocytes which lead to an immunological imbalance resulting in massive splenomegaly.

Filariasis research took an immunological slant with the observations that patients with persistent disease and long term complications also expressed a parasite induced immunological defect. These data appear to be confirmed by a similar defect found in the primate model system. This represents a significant step in elucidation of the cause and effects of chronic filariasis.

Manila

NAMRU-2's relationship with the Republic of the Philippines is one of long standing. An epidemic of cholera in Manila during 1961 brought NAMRU-2 and the Philippine Department of Health together for what has proven to be a long standing and mutually beneficial relationship. NAMRU-2 staff working with colleagues at San Lazaro Hospital modified and improved methods for treating cholera and developed oral rehydration therapy which has become a standard treatment for cholera and other diarrheal diseases and remains a major World Health Organization program to this day.

In 1966, NAMRU-2 returned to Manila to assist with an epidemic of dengue hemorrhagic fever. Then in early 1976, a new "mystery disease" was reported causing severe illness and death in the northwestern portion of Luzon. Teams of NAMRU-2 epidemiologists and parasitologists worked with Department of Health counterparts to discover that the disease was caused by a nematode parasite, *Capillaria philippinensis*. The life history of the parasite and the route of infection through eating small uncooked fish were discovered. Treatment of capillariasis was established and research efforts led to education and surveillance programs for control of the disease.

Other studies in the Philippines have included work on leptospirosis, scrub typhus, abnormal hemoglobins, amebiasis, diarrheal diseases, malaria, filariasis and schistosomiasis. A summary of biomedical surveys covering tens of thousands of

subjects from hundreds of sites on all the major islands of the Philippines was published in 1984 by Dr. John H. Cross of NAMRU-2 and Dr. Virginia Basaca-Sevilla of the Bureau of Research and Laboratories, our main basic science collaborator. This volume summarizes much of the epidemiology of diseases of military importance in the Philippines and signals a change in emphasis from epidemiology to pathophysiology, rapid diagnosis, treatment and control.

It is no wonder when politics called for NAMRU-2 to leave Taiwan that the command automatically turned to their frequent collaborators in the Philippines to identify a new location. This officially occurred on 15 April 1979. Laboratories and other facilities are established at the Bureau of Research & Laboratories and San Lazaro Hospital, the main infectious disease hospital, both located on the Department of Health compound in Santa Cruz, Manila. In addition to permanently establishing our relationships with the Philippine Department of Health, this move to the Philippines has enabled NAMRU-2 to establish close collaborative ties to Subic Naval Station and Clark Air Force Base. NAMRU-2 researchers are also able to take advantage of collaborative efforts with the Peace Corps, the Embassy Health Clinic, the Philippine Army Medical Department, and several Philippine universities and hospitals interested in infectious disease research.

COMMAND MISSION, FUNCTIONS, AND TASK

The purpose of the U.S. Naval Medical Research Unit No. 2 is to promulgate the mission, functions, and tasks of the Naval Medical Research Unit No. 2, Manila under the mission established by OPNAVNOTE 5450 Ser 09BS26/144097 of 27 Feb 79.

The mission of the Navy Medical Research Unit No. 2, as assigned by the Navy are to:

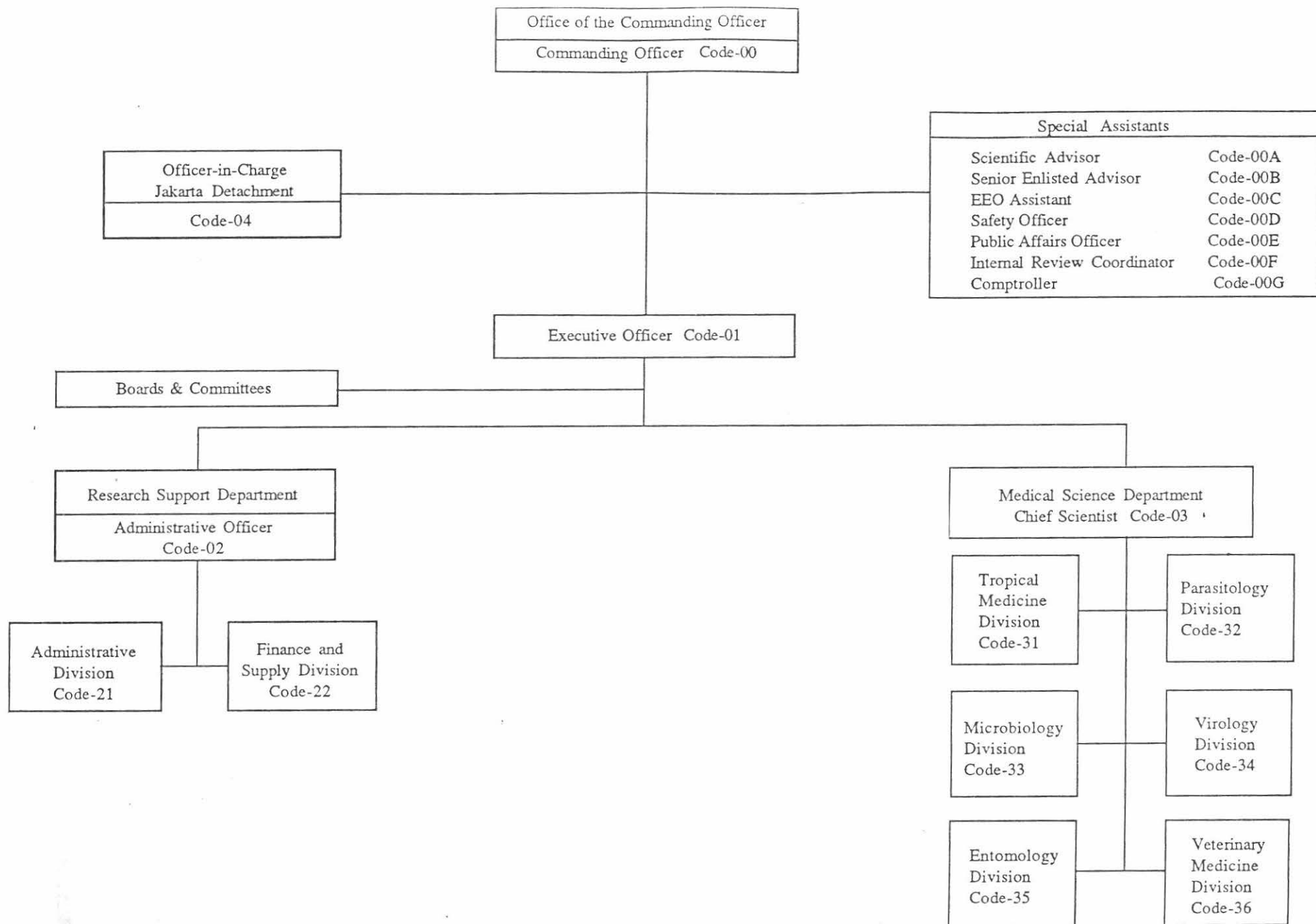
Conduct research, development, test, and evaluation in infectious diseases to enhance the health, safety, and readiness of Navy and Marine Corps personnel in the effective performance of peacetime and contingency missions in Southeast Asia, and to perform such other functions or tasks as may be directed.

Functions of NAMRU-2, as directed by the Commanding Officer, Naval Medical Research and Development Command, Bethesda, MD and under the cognizance of the Chief, Bureau of Medicine and Surgery, are to:

- a. Conduct research programs in infectious disease which directly relate to military medical requirements and operational needs.
- b. Conduct interactive biomedical research with Navy and other Department of Defense medical research and development laboratories, specifically in the areas of preventive medicine and epidemiology, and tropical medicine and infectious diseases.
- c. Develop and maintain the capability to provide infectious disease risk assessment information and conduct research and development to improve the prevention, diagnosis, and treatment of infectious diseases in the Fleet Marine Corps.
- d. Maintain a technology base and scientific and technical expertise in infectious disease and tropical medicine to provide advisory assistance when requested.
- e. Provide or undertake such other appropriate functions as may be authorized or directed.

NAMRU-2 Task:

Direct, manage, and support the U.S. Naval Medical Research Unit No. 2 Detachment, Jakarta, Indonesia.



DATE:
03-15-90

APPROVED:
J.C. COOLEAUGH
CAPT MSC USN

COMMAND RESPONSIBILITY:
NAVMEDRSCHDEVCOM

AREA COORDINATOR:
COMUSNAVPHIL

U.S. NAVAL MEDICAL RESEARCH UNIT NO. 2
MANILA, REPUBLIC OF THE PHILIPPINES

COMMAND RELATIONSHIPS

External Command Relationships

Command:	Chief of Naval Operations
	Chief, Bureau of Medicine and Surgery
	Commanding Officer, Naval Medical Research and Development Command
Support:	Naval Medical Research and Development Command
Hosts:	Department of Health Republic of the Philippines
	Ministry of Health Indonesia
Area Medical Coordinator:	NMC Pacific Region Barber's Point HI
Area Coordinator: (Manila)	Commander, U.S. Naval Forces Philippines
Area Coordinator: (Jakarta)	Defense Attache United States Embassy, Jakarta

MILITARY STAFFING*

Officers

	Manila		Jakarta		Army
	MC	MSC	MC	MSC	
Captain - 06		1			
Commander - 05			1		1
LT Commander - 04		2			
Lieutenant - 03		$\frac{3}{6}$		$\frac{5}{5}$	
TOTAL		6	1	5	1

Manila = 6
Jakarta = 7

Enlisted Personnel (Hospital Corps)

	Manila	Jakarta
E8	1	
E7	2	
E6	5	2
E5	$\frac{1}{9}$	$\frac{2}{2}$
TOTAL	9	2

Manila = 9
Jakarta = 2

GRAND TOTAL	15	9
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*As of 31 Dec 1988

CIVILIAN STAFFING*

	Manila	Jakarta
U.S. Civilian		
GM 15	1	
High Grades	(1) vacancy	
GS 12	<u>1</u>	
TOTAL	2 (1 vacancy)	0
Foreign Service Nationals		
GRADE		
12	3	1
11	-	-
10	-	1
9	(1) vacancy	3
8	2	5
7	9	6
6	20	4
5	3	9
4	3 (1 vacancy)	8
3	3	18
2	<u>-</u>	<u>1</u>
TOTAL	43 (2 vacancies)	56
Contract (PSC)		
3		1
2		1
1	-	<u>7</u>
		9
GRAND TOTAL	45	65

* As of 31 Dec 1988

PART II
DIVISION SUMMARIES

MANILA ENTOMOLOGY DIVISION

"This little insect has caused more swearing since the French have been in Mississippi than had previously taken place in all the rest of the world."

--- An anonymous Jesuit Missionary ca. 1772

Research and Services

The Entomology Division conducts studies of the vectors of militarily important diseases in the Philippines. Primary emphasis is placed upon mosquitoes transmitting malaria, dengue fever, and Japanese encephalitis. LT Barry A. Annis replaced LT George Schultz as Division Head in July 1988. LT Annis is assisted by HM1 Linda Raibe, an independent duty hospital corpsman. In addition, the Division is staffed by 4 permanent foreign service national employees and 2 local contract employees.

A new Entomology laboratory is under construction which, when completed, will greatly enhance the capabilities of the division. This new facility will contain a large insectary, a containment area for experimentally infected vectors, two laboratories, and ample office and storage space. Completion is scheduled for the fall of 1989.

Since 1985, the Entomology Division has conducted continuous surveillance of *Aedes aegypti* populations in Manila. *Aedes aegypti* is the primary vector of dengue fever. Data from vector population surveillance are correlated with climatic and disease incidence data to study the influence of environmental factors on disease cycles. These studies may lead to identification of environmental parameters which could be used by health authorities to predict the likelihood of dengue outbreak.

The Entomology division plays a key role in the NAMRU-2 malaria research program. Entomology personnel participate in drug prophylaxis trials, monitoring vector populations and transmission intensity at the study site. Other activities include studies of the behavior, ecology, biochemistry, and genetics of *Anopheles flavirostris*, the primary vector of malaria in the Philippines. These studies have identified two behavioral biotypes of this vector in different geographic regions of the archipelago.

In cooperation with the Virology Division, Entomology personnel are examining the potential of orbi or orbi-like viruses to interfere with replication of Japanese encephalitis virus in mosquito vectors. The objective of this project is to evaluate the potential of orbi-like viruses to act as biological control agents of JE transmission.

The Entomology Division provides taxonomic services to other organizations requiring mosquito identification expertise. Among the division personnel is one of only two practicing mosquito taxonomists in the Philippine Islands. These services have proven extremely valuable to the Preventive Medicine Service at Subic Bay as well as Philippine government agencies.

Presentations in 1988

LT G. W. Schultz

- "Seasonal abundance of dengue vectors in Manila, Republic of the Philippines", American Society of Tropical Medicine and Hygiene, 37th Annual Meeting, Washington, D.C., December 1988.

MANILA MICROBIOLOGY DIVISION

"A good set of bowels is worth more to a man than any amount of brains."

--- Stanley Falkow

Research and Services

The research activities of the Microbiology Division focus on the etiology, treatment, and prevention of diarrheal disease, specifically as it relates to active duty U.S. Military personnel stationed in or transiting the Philippines. The division is headed by LCDR Stephen E. Walz who replaced LT Marc A. Laxer in October of 1988. LCDR Walz is assisted by HM2 Valrie Winkelhaus and a civilian staff of three permanent foreign service national medical technologists and three local contract employees. Dr. Alberto K. Alcantara (FSN-12), a Research Specialist, is also assigned to the Microbiology Division. The Division operates two laboratories in San Lazaro Hospital and performs microbiological analysis on selected clinical specimens obtained from patients at San Lazaro and various other local hospitals, and also from study subjects participating in field surveys conducted throughout the Philippines.

In 1988 the division processed nearly 1000 clinical specimens. The majority of these were stool or rectal swab samples obtained from patients at the National Rehydration Treatment and Training Center on the San Lazaro Compound. This surveillance of enteric pathogens in the host national population is used to determine the relative prevalence of specific infectious agents, a necessary first step in assessing the threat which they pose to U.S. Military personnel. Furthermore, the results of antimicrobial susceptibility tests performed on these clinical isolates help identify emerging drug resistance patterns in addition to constituting the basis for therapeutic and prophylactic interventions. The local community also benefits directly from these surveillance activities in that culture and sensitivity results are reported to the attending physicians as soon as they are available.

As part of the divisions routine enteric work-up, fecal specimens are examined for the presence of 17 known, or suspected pathogenic species, not including the ova and parasite examinations performed by the Tropical Medicine Division. LT Laxer, who earlier in his tenure at NAMRU-2 determined that *Cryptosporidium* was associated with pediatric diarrhea in patients at San Lazaro, added procedures for identifying this coccidian to the routine stool examination. He also evaluated a commercially available *Cryptosporidium* fluorescent antibody test kit and found it to be a sensitive and convenient method of identifying *Cryptosporidium* in fecal specimens.

Although the routine stool examination is adequate for the identification of most known or suspected enteric pathogens, it is not comprehensive in that the complex biological assays or recombinant DNA techniques required to identify diarrheogenic *E. coli* are not performed. During the last quarter of this reporting year the division committed itself to filling this diagnostic void by placing on order the equipment and supplies needed to produce and utilize DNA hybridization probes. This represents a significant technological step forward which can be exploited for a variety of diagnostic and basic research purposes.

Presentations in 1988

LT M. A. Laxer

- "Cryptosporidiosis in the Philippines". Philippine Society for Microbiology and Infectious Diseases, Induction of Cebu Chapter Officers, Cebu, February 1988.
- "Cryptosporidiosis in the Philippines". Philippine Department of Health Infectious Disease Seminar, June, 1988.

LCDR S. E. Walz

- "Frequency of urease protein specific gene sequences among uropathogenic *Enterobacteriaceae*". Philippine Society for Microbiology and Infectious Diseases, 10th Annual Convention, December 1988.

Dr. A. K. Alcantara

- "Malaria update". Philippine Medical Association 81st Annual Convention, May 1988.
- "Amebiasis". Philippine Academy of Family Physicians, Post Graduate Module, Cebu City, May 1988.
- "Viral chemotherapy". Philippine Academy of Family Physicians, Iloilo Chapter, Scientific Meeting, September, 1988.
- "Malaria update". Philippine Society for Microbiology and Infectious Diseases, 27th Post-Graduate Course, November, 1988.

MANILA PARASITOLOGY DIVISION

"To the scientist nature is a mirror that breaks every thirty years: and who cares about the broken glass of past times?"

--- Edwin Chargaff

Research and Services

The main focus of research activities of the Parasitology Division is the study of human malaria in Southeast Asia. These studies involve the molecular characterization of the malaria parasite and the human immune response to infection with this parasite. Studies are also being conducted to determine the prevalence and etiology of malaria in various regions of the Philippines and to determine the extent of antimalarial drug resistance. The head of the Parasitology Division is LCDR James Burans who replaced LCDR Richard Oberst in October 1988. LCDR Burans is assisted by HM1 Zerrick Patriana and a civilian staff of three foreign service national, medical technologists. Dr. Nunilon Sy, a medical research specialist is also assigned to the Division. The Parasitology Division is located on the third floor of the Bureau of Research Laboratories building at the Philippine Department of Health compound. The Parasitology Division performs routine diagnostic parasitology on specimens submitted by the U.S. Embassy Medical Clinic, U.S. military hospitals, San Lazaro Hospital, and other hospitals in the Metro Manila area. The division also conducts several field studies each year to study new antimalarial drugs for prophylaxis or treatment of malaria and acquire specimens for molecular studies.

In 1988 a major prophylactic drug trial was conducted at our malaria study site on the island of Palawan. This study was initiated due to increasing reports of drug resistant malaria occurring throughout the Philippines. The study compared the efficacy of Mefloquine, Fansidar, and Chloroquine to a Placebo in preventing falciparum and vivax malaria. This study found Mefloquine, a newly licensed drug in the United States to be the most effective drug against both vivax and falciparum malaria. Fansidar protected against falciparum malaria but not against vivax. Chloroquine protected against vivax infection but did not protect against falciparum infection. This study generated important clinical findings of value both to U.S. personnel deployed in this region as well as to the Philippine Department of Health. In vitro assays for the determination of antimalarial drug resistance have also been reestablished within the division. Cultures of *P. falciparum* will be obtained during future field studies and analyzed for sensitivity to currently available antimalarials.

Over the last year several new molecular techniques have been established in the Parasitology Division. These techniques include SDS Gradient Gel Electrophoresis

and Western blots, which are currently being utilized for the molecular analysis of in vitro cultivated *P. falciparum*. Studies are being conducted in on non-synchronized cultures, synchronized cultures, and isolated merozoites utilizing serum specimens obtained at the malaria study site in Palawan.

Recently, these new molecular techniques have demonstrated a possible cross-reaction between antibodies to *P. falciparum* and HTLV-1. Sera from study volunteers in Palawan shown to have high antibody titers to *P. falciparum* were shown to be reactive to HTLV-1 by Western blot. Subsequent blocking experiments with solubilized *P. falciparum* antigen produced in tissue culture showed this reactivity to HTLV-1 was likely due to anti-malaria antibodies. Further studies are now being conducted to verify this finding.

Presentation in 1988

Dr. N.E. Sy

- "Malaria chemoprophylaxis trials in Napsan, Palawan", 11th Annual Convention, Philippine Society for Microbiology and Infectious Diseases, Manila, Philippines, 2-3 December 1988.

MANILA TROPICAL MEDICINE DIVISION

"Chance favors the prepared mind"

--- Louis Pasteur

Research and Services

The mission of the Tropical Medicine Division is to conduct research on tropical diseases of military importance in the Philippines; to investigate in detail the clinical signs and symptoms, pathophysiology, diagnosis and treatment of tropical diseases; and to provide biochemical, hematological, and parasitological support for all other divisions through the clinical laboratory. Dr. M.P. Joyce heads the Division. She is assisted by HM1 Bocaccio Aying and a foreign service national staff of five medical technologists and one registered nurse. The main tropical medicine laboratories are located on the third floor of the Bureau of Research Laboratories Building, while the clinical laboratory, also operated by the Tropical Medicine Division, is in San Lazaro Hospital.

In cooperation with the Olongapo and Angeles City social hygiene clinics, the Tropical Medicine Division conducts extensive surveillance of sexually transmitted diseases. The primary purpose of this surveillance is to monitor antimicrobial resistance patterns of gonococcal isolates. In 1988, the division performed over 1500 cultures and performed approximately 700 minimal inhibitory concentration assays, employing a variety of clinically relevant antibiotics. These studies showed that the percentage of *N. gonorrhoeae* isolates resistant to spectinomycin has increased from 18% in 1987 to 45% in 1988. During this calendar year, the division also compared a commercially available DNA hybridization probe to cervical culture for the detection of *N. gonorrhoeae* in surveys involving 1,489 asymptomatic women from Olongapo. The probe had a sensitivity of 78% and a specificity of 96% as compared to traditional culture on modified Thayer-Martin plates.

In addition to Tropical Medicine's own research efforts, the division supported other NAMRU-2 researchers and San Lazaro Hospital by examining 355 stool samples for the presence of ova and parasites. Tropical Medicine also maintains active *Leptospirosis*, *Entamoeba*, and *Giardia* cultures for use in serological assays.

MANILA VIROLOGY DIVISION

"The value of an idea lies in the using of it"

---Thomas Alva Edison

Research and Services

The research direction of the Virology Division has changed considerably over the past 2-3 years. The Division was established in 1983, and from that time until 1986, the major area of interest concerned arthropod-borne viral diseases such as dengue fever, Japanese encephalitis and chikungunya fever. In 1985 a new research project was started on the epidemiology of human immunodeficiency virus (HIV) infection among prostitutes in the Philippines and has since developed into the Division's largest effort. Even more recently, research also has started on a second human pathogenic retrovirus, human T-cell lymphotropic virus type 1 (HTLV-1). However, whether the focus of the Virology Division's research is on arboviruses or retroviruses the purpose of the research remains the same: to better understand the epidemiology and pathogenesis of viral diseases that are important to the U.S. Military in the Philippines and to develop improved methods for the rapid diagnosis of these pathogens. The Virology Division is headed by Dr. Curtis G. Hayes and he is assisted administratively by HMC James Hartman. Personnel wise, Virology is the largest of the Command's scientific divisions with a foreign service national staff of 6 and another 8 local contract employees. This staff is composed of 2 physicians, Dr. Corazon Manaloto and Dr. Linda Tuazon-Caringal, 2 nurses and 10 medical technologists. The Division's main laboratory is physically located at Pavilion 7 on the San Lazaro Hospital Compound. Satellite laboratories are operated out of the Social Hygiene Clinics in Angeles and Olongapo cities.

As mentioned above, the primary research emphasis of the Virology Division during 1988 was on the epidemiology of HIV infection in prostitutes. Most of this work was done in 2 cities, Olongapo and Angeles, both of which are located adjacent to large U.S. Military Bases. Over 15,000 prostitutes were sampled from these two cities in 1988 and tested for HIV infection. The low number of new positives found (11 women) was similar to what we have recorded over the past couple of years for these areas and shows that the incidence of new HIV infections remains low in the prostitute population. These studies help us to determine the risk of HIV infection to U.S. Military personnel stationed in or transiting through the Philippines. Another part of the HIV research program involves characterizing HIV-related disease in the Philippines. Although the secondary infections associated with the immunodeficiency caused by HIV infection have been well described in the U.S.A., this type of information is not available for the Philippines. Because of environmental differences

(tropical vs temperate climate; developing vs developed economy), we cannot assume the pattern of secondary infections will be the same in such different places. We are currently monitoring a number of HIV infected women who were asymptomatic at the time of diagnosis for the occurrence of disease attributable to immune suppression caused by HIV infection. To date the secondary infections seen in these women (primarily *Pneumocystis carinii* pneumonia and oral hairy leukoplakia) are similar to what has been reported from the U.S.A.

An epidemic of acute conjunctivitis occurred at Clark Air Base (CAB) in the latter half of 1988. From September through December, 2,600 cases presented to the 13th Air Force Medical Center located at CAB. The Virology Division coordinated and participated in a collaborative study with medical personnel from CAB and the National Naval Medical Center in Bethesda to characterize this outbreak. Adenovirus 19 and adenovirus 8 were the most common viruses isolated from the conjunctivitis patients.

During 1988 the Virology Division has continued to provide diagnostic support services to local hospitals, particularly for dengue hemorrhagic fever, Japanese encephalitis and chikungunya fever. This diagnostic support is also provided to the U.S. Peace Corps, U.S. State Department and U.S. Military personnel in the Philippines.

Presentations in 1988

Dr. C.G. Hayes

- "Epidemiology of HIV infection in prostitutes in the Philippines", IVth International Conference on AIDS, Stockholm, June 1988.
- "AIDS situation in the Philippines", Postgraduate course on the fetus as a patient, Philippine Children's Medical Center, Quezon City, July 1988.
- "Epidemiology of HIV infection in the Philippines", Workshop on the epidemiology of retroviral infections, Washington, D.C., November 1988.
- "Dengue fever", Pacific Air Force BEE/EHS Conference, Camp John Hay, November 1988.

Dr. C.R. Manaloto

- "AIDS: The facts and drugs", 2nd Joint Philippine College of Radiology and Philippine Association of Radiologic Technologists, Inc., Manila, 23 January 1988.

- "Dengue fever", Philippine Medical Association - 81st Annual Philippine International Convention Center, Manila, 18-22 May 1988.
- "Update on AIDS", 17th Annual Postgraduate Course, University of Santo Tomas Faculty of Medicine and Surgery, Manila, 21 July 1988.
- "Dengue hemorrhagic fever", Philippine Society for Microbiology and Infectious Diseases, Cebu Chapter Postgraduate Symposium, 1 October 1988.
- "Chikungunya in the Philippines: Clinical observations and correlation of serum Chikungunya IgM with joint pains", (Poster Session)", First Asia-Pacific Congress of Medical Virology, Singapore, 10 November 1988.

JAKARTA ENTOMOLOGY DIVISION

*"What's the use of their having names," the Gnat said, "if they won't answer to them?"
"No use to them," said Alice; "but it's useful to the people that name them, I suppose."*

--- Lewis Carroll

Research and Services

The primary function of the Entomology Division is to conduct research and development on the identification, collection, biology, maintenance, prevention and control of arthropod vectors of diseases of military importance in Indonesia. These diseases include, but are not restricted to, malaria, arboviruses and filariasis. The Division is headed by LT Michael J. Bangs who replaced LT Barry A. Annis in June of 1988. One Research Associate (FSN-10) and four permanent foreign service national technicians are assigned to the Division. The Division operates out of the Indonesian National Institutes of Health Research and Development compound in Jakarta. A satellite laboratory in Jayapura, Irian Jaya, is used for malaria vector investigations in this easternmost province.

During the year, an active and productive insectary was maintained, both for Entomology Division use and in support of other NAMRU divisions and local collaborating laboratories. Seven different mosquito species were maintained for virologic diagnostic work, parasite maintenance and malaria and filariasis experimental infection investigations. An important service also involved supplying arthropod and parasite material for research, identification and teaching purposes in both regional and stateside laboratories. Another important component was to provide for technology transfer through counterpart study and training programs in vector biology. Our knowledgeable staff was often sought for teaching purposes specific to their entomologic expertise.

Over this period, dengue vector surveillance was continued in Jakarta, a documented "hot-bed" for this arboviral disease. By observing the relationship between weather (i.e. rainfall and temperature) and *Aedes aegypti* populations, we were able to estimate the greatest period of risk for dengue virus exposure. Information of this sort is essential in order that U.S. military personnel can be appropriately prepared to exercise personal protection against vectors of this highly debilitating infection. Along the lines of control, various field and laboratory experiments were conducted using *Toxorhynchites splendens* as a possible biological

control agent. This nonvector mosquito species is highly predaceous on *Aedes aegypti* larvae. Information dealing with long-term, low cost, non-insecticidal dengue control strategies has the interest of our Indonesian counterparts and is of direct benefit to the local community.

Malaria is a major concern to our operating forces and Indonesia has no shortage of this mosquito-borne disease. Identification of vectors, distribution of disease and methods of control are some of the many aspects that are important in the medical planning phases of operations. Our efforts in Irian Jaya (Indonesian New Guinea) have given us added insights in the focal epidemiology of this disease. The baseline and longitudinal data we acquired can be used in future drug, vaccine, and vector control trials.

One of the important areas of biotechnology assessment that this Division has actively pursued has been the use of the sporozoite enzyme-linked immunosorbent assay (ELISA) for detection of infected mosquitoes. This technique has allowed us to differentiate between mosquito carriage of *Plasmodium vivax* and *P. falciparum* by examining individual or pooled mosquitoes for sporozoite antigen. Its epidemiologic use will be further evaluated in the coming year.

JAKARTA IMMUNOLOGY DIVISION

"The truth of nature, which I had chased away, returned by stealth through the back door, disguising itself to be accepted....."

--- Johannes Kepler

Research and Services

The Division of Immunology studies the human immune response to malaria. The Division is headed by LT Trevor Jones who is assisted by three full-time foreign service national technicians. The immunoassays are performed mostly in the laboratory facilities of NAMRU-2 Detachment in Jakarta, Indonesia but some are occasionally executed in our satellite laboratory in Jayapura, Irian Jaya (Indonesian New Guinea).

Malaria poses a substantial threat to the health and therefore readiness of deployed military forces. A method of generating immunity to malaria is highly desirable. This division carries out basic studies into the mechanics of malaria immunity and cooperates with stateside military laboratories in studies of malaria vaccine candidates. Our work is also of interest to the health officials of our host nation because a sizeable portion of the population is at risk of infection and disease. In pursuit of host-guest cooperativity, we share our findings and in this past year have trained host country investigators and technicians in several immunologic techniques used in this division.

Policies of the Government of the Republic of Indonesia encourage the migration of citizens from heavily to lightly populated islands. In some cases, this has resulted in persons moving from nonmalarious to malarious areas. This phenomenon offers an excellent opportunity to study aspects of the immune response to malaria in both immune and nonimmune individuals. In conjunction with the Division of Parasitology, the residents of a village in Irian Jaya have been intensively studied from epidemiologic, parasitologic and immunologic points of view. In 1988 this division processed over 1,100 serum samples collected at the study site for evaluation of antibody response to whole, fixed malarial parasites and solubilized malarial antigens.

Findings from these immunologic studies indicate that the humoral response to malaria is generated more rapidly than previously thought but that it does not appear capable of controlling the disease by itself. Epidemiologic studies done cooperatively with the Division of Parasitology show that nonimmune individuals are more susceptible to blood stage disease and illness. However, these nonimmune subjects

are becoming increasingly resistant to disease at a rate far faster than previously expected.

Presentations in 1988

LT Trevor Jones

- "Assessment of naturally acquired resistance to blood stage *P. falciparum* in Irian Jaya, Indonesia", 37th Annual Meeting of the American Society of Tropical Medicine and Hygiene, Washington, D.C., 4-8 December 1988.
- "Malaria epidemiology and immunology in Irian Jaya", Seminar sponsored by the Indonesian Ministry of Health, Jayapura, Irian Jaya, May 1988.

JAKARTA MICROBIOLOGY DIVISION

"If you do not expect to, you will not discover the unexpected."

--- *Heraclitus*

Research and Services

The research activities of the Microbiology Division, NAMRU-2 Detachment, emphasize the development and evaluation of methods to rapidly identify etiologic agents of diarrheal and febrile illness in Indonesia. The Division is currently headed by LT Donald H. Burr, MSC, USN. The Division civilian staff include four permanent foreign service national medical microbiologists and one Senior Research Associate, Dr. Murad Lesmana.

The Division occupies three laboratories which are divided into clinical and research activities. During 1988 the Clinical Section processed over 1,000 clinical specimens including rectal and stool samples, blood, urine and bone marrow aspirates. The Clinical Section also provided diagnostic support to the Clinical Medicine Division during this division's various vaccine and treatment trials.

The research projects in the Microbiology Division focus on two important public health problems in Indonesia, diarrheal disease and typhoid fever. Studies to determine the etiology and clinical symptoms associated with diarrheal disease are being conducted in several local hospitals in Jakarta involving both pediatric and adult study populations. In addition to identifying the common bacterial agents causing diarrheal disease such as *Salmonella*, *Vibrio*, *Shigella*, *Campylobacter* and Rotavirus, the Division is collaborating with NAMRU-2 Manila and Armed Forces Research Institute of Medical Sciences, Bangkok, Thailand, to develop the capability to use newer sophisticated DNA probes and bioassays to determine the relative importance of different enterovirulent determinants of *E. coli* isolated from diarrheal diseases cases.

A rapid method to detect *Campylobacter* gastroenteritis was developed based upon detecting specific anti-campylobacter IgA antibody in stools of patients infected with *Campylobacter*. Current studies to evaluate the sensitivity and specificity of this assay are in progress. The Division also collaborated with researchers at Walter Reed Army Institute of Research and the University of Indonesia to evaluate a DNA probe for diagnosing *S. typhi* in patients with suspected typhoid fever. Successful methods to concentrate and isolate *S. typhi* were developed which allowed for the direct probing of blood samples for *S. typhi*. Future plans are to develop the technology to use the polymerase chain reaction method and enzyme-linked oligonucleotide DNA probes to rapidly identify *S. typhi* in patients with typhoid fever.

Presentation in 1988

LT D.H. Burr

- "Infant botulism: clinical, epidemiology and animal models", Department of Pediatrics, Sumber Waras Hospital, Indonesia, November 1988.

JAKARTA PARASITOLOGY DIVISION

The Parasitology Division in Jakarta is headed by LT Kevin Baird and is staffed by five permanent foreign service nationals. Mr. Purnomo is the Division's Research Associate. He is an internationally known expert on the diagnosis of parasitic diseases and a regular contributor to regional and international biomedical journals. The Division operates two laboratories at NAMRU-2 DET in Jakarta, one for diagnostic services and the other for experimental parasitology. The Division is field-oriented, conducting most work away from Jakarta in remote field sites.

In 1988 the parasitology Division completed two long-term field studies in Arso, Irian Jaya. The objective of these studies was to compare immune responses to malaria between natives of Irian Jaya, who have a high degree of naturally acquired immunity to malaria and transmigrants from Java who had no immunity to malaria when they arrived in Irian Jaya in 1986. Differences in immune responses, in view of more frequent and severe malaria among the Javanese people, provided clues as to the mechanics of naturally acquired immunity. If the process were well understood it could be exploited in developing artificial immunity to malaria by vaccination.

The first study began in November 1987 and was completed in March 1988. A total of 240 people were checked once every two weeks for malaria. Over the course of the study, several thousand blood films for diagnosis were collected and examined. Also, a total of nearly 1,000 blood specimens were drawn and each sample was later tested by six different immunoassays. Each volunteer was also examined for spleen enlargement, hemoglobin abnormalities, hematocrit, and frequency of illness caused by malaria. Analysis of all these factors revealed important characteristics of naturally acquired immunity to malaria.

The second malaria epidemiology study began in May 1988 and was completed in October. Nearly 150 volunteers were each given a supervised course of chemotherapy lasting two weeks to insure they were free of malaria parasites. As the volunteers became positive for malaria over time, they provided a quantitative measure of malaria transmission in the study village. This information is useful to local health officials. Also, the rapidity with which volunteers became positive provided a measure of their immune resistance to reinfection. This permitted another battery of immunoassays comparing acquired immunity to each immune response. This provided further insight to naturally acquired immunity to malaria and established baseline epidemiologic measurements required in areas where vaccine candidates may be tested.

While working at the field site on these epidemiology projects the Parasitology Division conducted over eighty in vivo tests of resistance to chloroquine by *Plasmodium falciparum* and conducted a field evaluation of the quantitative buffy coat (QBC) test for the rapid diagnosis of malaria. Under primitive field conditions, the QBC test proved more laborious and slower than standard diagnostic techniques.

The Division completed an in vitro analysis of potential chemoprophylactic agents for prevention of infection by the filarial parasitic worm, *Wuchereria bancrofti*. Worm larvae incubated for 21 days in the presence of various drugs and the effects of the drugs on larval molt and survival were quantitated. The molt must occur in humans for the filarial infection to become successful. Therefore, inhibition of molt by any given drug would suggest potential use as a chemoprophylactic agent to protect U.S. personnel deployed to endemic areas. The tests showed ivermectin to be a relatively potent molt inhibitor. Based on these results, studies of chemoprophylaxis with ivermectin in deployed Indonesian marines are being planned.

During the calendar year 1988 the Division provided formal training in numerous sophisticated laboratory procedures to four Indonesian scientists. Also, several hundred blood films containing malaria or filarial parasites were provided to the Armed Forces Institute of Pathology and to the Uniformed Services University of the Health Sciences for training of military personnel. The Division provided over one hundred blood specimens on nitrocellulose blots for testing a DNA probe for diagnosis of *Plasmodium vivax* by NMRI scientists. Several hundred larvae of *Wuchereria bancrofti* were also collected and shipped to NMRI for development of DNA diagnostic technology.

Presentations in 1988

LT J.K. Baird

- "Diagnosis of parasites in tissue sections", University of Indonesia School of Medicine, Department of Pathology Seminar, Jakarta, January 1988.
- "Malaria studies in Irian Jaya", Provincial General Hospital Seminar, Jayapura, Irian Jaya, June 1988.
- "Ring-infected erythrocyte surface antigen in immune and nonimmune residents of Arso, Irian Jaya, American Society of Tropical Medicine and Hygiene, Washington, D.C., December 1988.

Mr. Purnomo

- "Levamisole untuk pengobatan cacing usus", Seminar Parasitologi Nasional V dan Kongress P41 ke-4, Bogor, 20-22 August 1988.

- "Pemakaian repelen komersil yang mengandung Toluamide terhadap *Culex fatigans* di Jakarta", Seminar Parasitologi Nasional V dan Kongres P41 ke-4, Bogor, 20-22 August 1988.

JAKARTA TROPICAL MEDICINE DIVISION

"The known is finite, the unknown infinite; intellectually we stand on an islet in the midst of an illimitable ocean of inexplicability. Our business in every generation is to reclaim a little more land"

--- T.H. Huxley

Research and Services

The mission of the Tropical Medicine Division is to conduct research on tropical diseases of military importance in Indonesia; to obtain information on the epidemiology, rapid diagnosis, pathophysiology, treatment, and control of tropical diseases; to maintain up-to-date diagnostic support capabilities; and to identify and characterize test sites for developing chemotherapy and immunoprophylaxis. The division is headed by LT Nancy Witham, who replaced CDR F.P. Paleologo in October 1988. She is assisted by a civilian staff that includes Dr. Narain Punjabi and five foreign service national technicians.

The Tropical Medicine Division maintains and operates the Clinical Research Center - Intensive Care Unit (CRC-ICU) at the teaching hospital of the University of Indonesia in Jakarta. The CRC-ICU has been accepting patients for study and treatment since early 1988. Although designed for the study of severe dengue hemorrhagic fever, the unit has expansive capabilities and can be used for a wide variety of clinical studies.

In addition to maintaining the CRC-ICU, the Division has been actively engaged in enteric disease research. In a hospital based study, pre-cooked rice-powder supplemented oral rehydration solution (PR-ORS) was compared to the standard citrate preparation in the treatment of severely dehydrated cholera patients. PR-ORS was found to significantly decrease the stool output. In a major field trial, the Ty21a oral typhoid vaccine was demonstrated to have an efficacy of 55% for the liquid formulation and 41% for the capsule formulation. Although efficacy increased slightly over the surveillance period, overall efficacy was too low to consider the vaccine useful in an area with attack rates as high as were observed at the study site. The vaccine showed no protective effect against *S. paratyphi* A. Also, a pre-trial of the immunogenicity of the Vi-capsular polysaccharide (CPS) vaccine showed good acceptability and minimal side effects.

Presentations in 1988

CDR F.P. Paleologo

- "Randomized double blind placebo controlled trial of the efficacy of Ty21a oral typhoid vaccine in Plaju, Indonesia", 28th ICCAC, Los Angeles 23-26 October 1988.

Dr. Punjabi

- "Cost benefit of vaccination with Ty21a oral typhoid vaccine in Plaju, Indonesia"

JAKARTA VIROLOGY DIVISION

"I don't know it must be a virus"

--- Anonymous physician

Research and Services

The Virology Division continues to focus its attention on the epidemiology, diagnosis, and pathogenesis of tropical and subtropical viral diseases. Strongest interests are in diseases caused by dengue, Hantaan, Japanese encephalitis, chikungunya, rotavirus and influenza viruses. Along with its own active surveillance work (particularly in animal reservoirs), the Division continues to provide diagnostic testing for viruses by several methods, including virus culture and mosquito passage, for all other Detachment divisions and for several collaborating hospitals in Jakarta and throughout Indonesia. The head of the Division is LTC Curtis R. Bartz, a veterinarian and virologist. He is assisted by a civilian staff of nine permanent foreign service national technologists, including two veterinarians, two pharmacists and one with graduate-level experience in virology. Dr. Bartz is also in charge of NAMRU-2 DET's animal colony.

The Division processed over 4,000 specimens for virus isolation or serology in 1988. Human and animal sera were tested with the enzyme linked immunosorbent (ELISA) and hemagglutination inhibition (HI) assay. Human specimens were principally assayed for dengue virus, rotavirus and Japanese encephalitis virus. Continued surveys of animal hosts are important surveillance techniques done by this division in several locations throughout Indonesia. Survey results are used in an attempt to predict subsequent patterns of human disease. Likewise, cultures from insect vectors provide important information on their rates of infection. This may also be helpful in predicting location and severity of outbreaks of human disease.

The major item of interest during the 1988 calendar year was an epidemic of dengue in Indonesia. All four dengue virus types were isolated from patients at the Sumber Waras Hospital in Jakarta. Dengue-3 was predominant, with Den-1 and Den-2 being isolated in nearly equal numbers and Den-4 much less commonly. The 17 patients with dengue-4 isolates were older (>18 yr average) and a greater proportion of them were males (80%) than with the other types. Three chikungunya isolates were also obtained from the 1,631 patients sampled during the epidemic. Chikungunya remains endemic in Jakarta, with patients presenting with hemorrhagic signs rather than with the classical arthralgia syndrome.

Serologic surveys for Hantaan virus infections of rodents were continued in 1988 as well. Anti-Hantaan like virus antibodies were found in the rats collected from Jakarta and South Kalimantan. Additional samples were collected to better define this group of viruses in Indonesia and are presently being evaluated.

Presentations in 1988

LTC C.R. Bartz

- "Dengue hemorrhagic fever in Sumber Waras Hospital, Jakarta, Indonesia", Presented at the First Asia-Pacific Congress of Medical Virology, Singapore, 8 November 1988.
- "Dengue in expatriates in Bogor, Indonesia", Presented at the First Asia-Pacific Congress of Medical Virology, Singapore, 8 November 1988.
- "Influenza surveillance in Java, Indonesia, 1984-88", Poster at the First Asia-Pacific Congress of Medical Virology, Singapore, 8 November 1988.
- "Dengue hemorrhagic fever in Sumber Waras Hospital in Jakarta, Indonesia", Presented at the American Society for Tropical Medicine and Hygiene, Washington, D.C., December 1988.

MANILA ADMINISTRATIVE DIVISION

The Administrative Officer, LT Kenneth Takahashi, MSC, USNR, is the head of Research Support Department as well as the Administrative Division. A civilian staff of 11 foreign service nationals and 29 contract employees complement this Division. The service provided include: personnel liaison, transportation, postal services, security, communications, publications, data processing, library services, graphic arts, facilities maintenance, and veterinary medical support. The Administrative Division is responsible for the overall coordination of administrative functions of the command and tasked with providing support services to the investigators in order to assist in their ongoing research programs.

Calendar year 1988 was one of change at NAMRU-2. Captain James C. Coolbaugh replaced Captain Larry W. Laughlin as Commanding Officer. Also, three new scientific division heads reported aboard. The personnel and logistic demands occasioned by these changes were a major challenge to the Administrative Division.

Also worthy of particular note was the performance of the Biostatistics Branch, which efficiently kept pace with the increasing automated data processing demands of the scientific staff. Likewise, the Medical Library Branch continues to be an invaluable resource, both to the NAMRU-2 staff and to associate host national researchers. In addition to maintaining in excess of 12,5000 books and journals, the library staff handles investigator requests for inter-library loans and conducts automated scientific literature searches on a routine basis.

MANILA FINANCE AND MATERIEL DIVISION

The Finance and Materiel Division manages the Command's operating funds, acts as authorization accounting activity (AAA), and provides materiel support to other divisions. The Division is headed by LT Danilo Yu, who is assisted by HM1 Rex Winkelhaus and a civilian staff of eight permanent foreign service nationals and two local contract employees.

In Fiscal Year 1988 the Division had a total budget execution of \$3.3M, representing \$1.8M in direct funds and \$1.5M in Army reimbursable program appropriations. The accounting section maintains the accounting records of the Command and Jakarta Detachment. Additionally, over 200 line items of plant property and almost 1,400 minor property items are maintained. In FY 88 the materiel section processed a total of 3,850 open purchase and standard stock requisitions. More than 400 line items are stocked in the supply warehouse.

Two special projects were completed in 1988; specifically, the Animal House Building and the addition of a second floor material storage room in the garage building.

The support provided by the Division to all scientific divisions ensures funding of routine requirements, coordination and provision of materiel for research field sites, and programming for future requirements.

JAKARTA RESEARCH SUPPORT DIVISION

The mission of the Research Support Division is to assist the Officer in Charge in his responsibilities of ensuring that all orders, policies and directives of the command are implemented and executed. Assistance was given to several divisions in the use of their computer systems. Relations were strengthened with several departments at the American Embassy Jakarta.

The mission of the Research Support Division is to assist the Officer in Charge in his responsibilities of ensuring that all orders, policies and directives of the command are implemented and executed. Other responsibilities include the development, monitoring, and supervision of all administrative programs, such as personnel management, fiscal and material management and the daily support thereby establishing sound administrative procedures.

The Administrative Officer is LT Danny D. Urban who relieved LT Ivory W. Taylor in October 1988. LT Urban is assisted by a military staff of HM1 Ada Seeker and HM1 Jimmy Thomas.

The Civilian support staff include: (one each) Administrative Assistant; Secretary/Library Assistant; Secretary; Procurement Clerk; Accounts Maintenance Clerk; Supply/Property Clerk; Supply/Mail Clerk; Medical Repair Technician; Maintenance Foreman; Dispatcher; (two each) Carpenters/Mason; Janitors; Generator Operators; Watchmen; and 8 Drivers.

In 1988 the Division accomplished several improvements beyond the normal processing of letters, memos, purchase orders, accounting records, transportation and maintenance of the buildings and equipment. The daily business is by no way routine at a Detachment that is approximately 2,000 miles away from the parent command.

During this year the Detachment communication systems were upgraded by a new phone system and a facsimile machine. The Electronic Mail System also improved communication by linking the Detachment to other research labs through the WRAIR VAX computer.

The working environment was improved through renovation of laboratory, administrative and library spaces. The installation of two uninterrupted power supply systems, one at the CRC-ICU at Cipto Hospital and the other at NAMRU, helped assure the labs of a dependable source of power.

Other accomplishments in the fiscal area included development and implementation of an ongoing financial reporting system so that all division have monthly fiscal reports for their division, and meeting a 99% obligation rate.

Accomplishments in the Supply area included: 1. Improved communication with NAMRU-2, Fiscal/Supply Division; 2. Improvement of the physical appearance of the supply storage area using the Navy survey process and disposal to clear the area of excess equipment; 3. Improved reporting to the divisions by computerizing the inventory and plant property.

The Administrative Division improved systems for document handling to insure the integrity of command files. Assistance was given to several divisions in the use of their computer systems. Relations were strengthened with several department at the American Embassy Jakarta.

PART III
AWARDS, HONORS
AND
NOTABLE EVENTS

AWARDS GIVEN DURING FY 1988

Navy Achievement Medal:	LT Danilo L. Yu LT George W. Schultz HM1 Cheryl Miller LT Eileen Franke												
Navy Commendation Medal:	LT Ivory Taylor LCDR Richard Oberst												
Letter of Appreciation:	LTC Curtis Bartz HM1 Cheryl Miller Fleet Logistics Support Squadron-50, Cubi Pt. GYSGT Orville R. Hart, USMC, 3rd Marine Expeditionary Force Subunit II, Subic Bay DK2 Jeffrey W. Amey, PSD Subic Bay												
Letter of Commendation:	HMC James Hartman												
Sailor of the Year:	HM1 Cheryl Miller												
Cash Award and certificate:	Mr. Purnomo (Jakarta Detachment) Elsie P. De Jesus Vivien Valila Jocelyn M. Andrada												
Group Achievement Award Certificate:													
Parasitology Group:	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Dr. Nunilon E. Sy</td> <td style="width: 50%;">Patricia Macalagay</td> </tr> <tr> <td>Dr. Alberto K. Alcantara</td> <td>Lily Alquiza</td> </tr> <tr> <td>Dr. Corazon Manaloto</td> <td>Teresa Ponio</td> </tr> <tr> <td>Dr. Laurena Padre</td> <td>Fe Baraceres</td> </tr> <tr> <td>Victoria Fallarme</td> <td>Sulpicio Zabala</td> </tr> <tr> <td>Shirley Cruzada</td> <td></td> </tr> </table>	Dr. Nunilon E. Sy	Patricia Macalagay	Dr. Alberto K. Alcantara	Lily Alquiza	Dr. Corazon Manaloto	Teresa Ponio	Dr. Laurena Padre	Fe Baraceres	Victoria Fallarme	Sulpicio Zabala	Shirley Cruzada	
Dr. Nunilon E. Sy	Patricia Macalagay												
Dr. Alberto K. Alcantara	Lily Alquiza												
Dr. Corazon Manaloto	Teresa Ponio												
Dr. Laurena Padre	Fe Baraceres												
Victoria Fallarme	Sulpicio Zabala												
Shirley Cruzada													
Entomology Group:	Noemi Fernandez Edna Wilson Monina Bartoces Fe Leblanc Alexander Blanco												

Finance Group:

Ofelia Ables
Teresita Manuel
Marissa Ramchand
Josephine Caluza

Safe Driving Award:

Demetrio San Jose
Brigido Santos

NOTABLE EVENTS OF 1988

NAMRU-2 Change of Command

On 8 July 1988, CAPT James C. Coolbaugh, MSC, USN, relieved CAPT Larry W. Laughlin, MC, USN as Commanding Officer of NAMRU-2.

Completion of NAMRU-2 Animal Care Facility

Construction of the new animal care facility located on the San Lazaro Compound grounds was completed, enabling all research animals to be housed under one roof and under the care and maintenance of the Veterinary Medicine Branch staff.

Completion of PAV-9 (Garage) Renovation

Completed construction project for the Garage Building which included concrete paving for parking driveway and ramps, installation of drainage system and construction of mezzanine storage spaces.

Plans for New Entomology Division Building

Plans completed for construction of new Entomology Building to be located on the San Lazaro Compound grounds adjacent to PAV-9. New building will greatly enhance the Division's capabilities. Construction to begin in 1989.

Special Project for Animal House, NAMRU-2 Detachment

Funding and plans approved for repair/renovation of the animal care facility in Jakarta.

**Other Meetings and Conferences Attended by NAMRU-2
Manila Staff in 1988**

Animal Lab Meeting
Bangkok, Thailand
10-15 January 1988
Attendee: Dr. Rennie del Rosario

Microcomputer Tutorial: Lotus
14-21 March 1988
I/ACT, Manila
Attendee: Victoria Fallarme

Training of Animal Use and Observation of
Animal Facilities
Jakarta, Indonesia
15-18 January 1988
Attendee: Dr. Rennie del Rosario

Microcomputer Tutorial: D-Base III
I/ACT, Manila
22-29 March 1988
Attendee: Victoria Fallarme

Navy-Wide E7 Examination
Subic Bay
20-21 January 1988
Attendees: HM1s Leblanc, Miller,
Patriana, Raibe

Training on Gas Free Engineering for Non-
Maritime Operation Ashore
CCPO, Subic Bay
29 March - 8 April 1988
Attendee: HMCS Michael Malizio

Occupational Health Preventive Medicine
Unit Conference
Subic Naval Hospital
28-30 January 1988
Attendee: Dr. M. Patricia Joyce

Review of Scientific Program
Jakarta, Indonesia
11-15 April 1988
Attendee: Dr. Curtis G. Hayes

55th Annual Convention on Philippine
Veterinary Medical Association
PICC, Manila
18 February - 19 March 1988
Attendee: Dr. Rennie del Rosario

E7/#9 Petty Officers Writing Course
Naval Station, Subic Bay
1-13 May 1988
Attendee: HM1 Cheryl Miller

Training on DNA Probe Technique for
ETEC/EIEC
Bangkok, Thailand
21 February to 5 March 1988
Attendee: Soledad Bautista

ASM Meeting
4-18 May 1988
Miami, Florida
Attendee: HM1 Boccacio Aying

PSMID Cryptosporidiosis Paper
Presentation
Cebu
26-28 February 1988
Attendee: LT Marc Laxer

Scientific Paper Presented at the ASM
Meeting
6-13 May 1988
Miami, Florida
Attendee: Dr. M. Patricia Joyce

Supervisor's Training Course - Phase 1
8-13 May 1988
CCPO, Subic Bay
Attendees: Ofelia Ables, Soledad Bautista,
Noemi Fernandez, Elsie de Jesus, Teresa
Ponio

LAB Meeting at CDC
Atlanta, Georgia
14-28 May 1988
Attendee: Dr. M. Patricia Joyce

Internal Review of NAMRU-2 Detachment
Jakarta
Jakarta, Indonesia
20 May - 4 June 1988
Attendees: LT Danilo Yu, HMCS Michael
Malizio

ADP Security Test and Evaluation Course
CCPO, Subic Bay
22-26 May 1988
Attendees: LT Danilo Yu, Roberto
Asuncion

Seminar/Workshop on Classification and
Cataloging of Books, Serials, and Non-
Book Materials
Metro Manila
25-27 May 1988
Attendees: Myrna Uyengco, Jocelyn
Soriano

Supervisory Development Phase II -
"Personal Management"
Subic Bay
5-11 June 1988
Attendees: Soledad Bautista, Noemi
Fernandez, Elsie de Jesus, Teresa Ponio

4th International Congress on AIDS
Stockholm, Sweden
12-17 June 1988
Attendees: Dr. Curtis G. Hayes

Convention on "The Veterinarian in
Animal Care and Public Health"
Manila
16-17 June 1988
Attendee: Dr. Rennie del Rosario

Technical Assistance/Support to Naval
Hospital (Guam) in obtaining necessary
equipment and training in Serology of
Dengue Naval Hospital
Guam
21-30 June 1988
Attendee: Elsie de Jesus, HMC James
Hartman, Senen Descalzo

2nd National Training Course in Radio-
immunoassay
Philippine Nuclear Research Institute
5-15 July 1988
Attendees: Patricia Macalagay, Zerick
Patriana

Seminar on High Pressure Liquid
Chromatography (Sponsored by BOIE)
Manila
14-15 July 1988
Attendees: Elsie de Jesus, Natividad
Ramilo

18th Congress of the International
Association of Medical Laboratory
Technologists
Kobe, Japan
17-22 July 1988
Attendee: Shirley Cruzada

Entomology Program Review
Subic Bay
18-20 July 1988
Attendee: Dr. George Schultz

ALS Instructor Course
Subic Bay
19-20 July 1988
Attendee: HM1 Rex Winkelhaus

Training on AMSCO Sterilizers
Naval Hospital, Subic Bay
9-12 August 1988
Attendee: HM1 Michael Leblanc

Seminar on Travel Claims Preparation
PSD Subic Bay
16-17 August 1988
Attendee: Jocelyn Andrada

American Value Seminar
Subic Bay
8-9 September 1988
Attendee: Jocelyn Andrada, Rennie del
Rosario, Cleotilde Torres, Myrna Uyengco

4th Seminar on Infectious Diseases:
"Fluorescent AFB Microscopy and MTB
Antimicrobial Susceptibility Testing"
San Lazaro Hospital
20 September 1988
Attendees: Shirley Cruzada, Victoria
Fallarme, Patricia Macalagay, Zerick
Patriana

Refresher Training Course
Naval Hospital, Subic Bay
26-30 September 1988
Attendee: HM1 Linda Raibe

Pre-retirement Seminar
Subic Bay
28-30 September 1988
Attendee: HMC Edilberto Corpuz

Lecture on Dengue Hemorrhagic Fever,
Post Graduate Course
PSMID Cebu Chapter
30 September - 2 October 1988
Attendee: Dr. Corazon Manaloto
(Lecturer)

Lecture on ELISA and Western Blot Post
Graduate Symposium
30 September - 2 October 1988
PSMID Cebu Chapter
Attendee: Dr. M. Patricia Joyce (Lecturer)

24th Annual Convention of the Philippine
Association of Medical Technologists
PICC, Manila
6-8 October 1988
Attendees: Shirley Cruzada, Victoria
Fallarme, Patricia Macalagay, HM1 Zerick
Patriana

Philippine Environmental Mutagen
Society: "Advances in Research in Anti-
Mutagens"
University of the Philippines
15 October 1988
Attendee: Victoria Fallarme

Second Asian Course in Tropical
Epidemiology
Mahidol University, Bangkok, Thailand
7-25 November 1988
Attendee: Dr. Nunilon E. Sy

11th Annual Convention, Philippine Society
for Microbiology and Infectious Diseases
Manila
2-3 December 1988
Attendees: Shirley Cruzada, Victoria
Fallarme, Patricia Macalagay, Zerick
Patriana, Dr. Nunilon E. Sy

COMMAND FUNDED FIELD TRIPS FOR 1988 PHILIPPINES

Dates	Place	Purposes
18-20 Dec 87	Napsan, Palawan	Meet with residents of Napsan
26 Jan to 21 Feb 88 6-21 Feb 88	Napsan, Palawan	Malaria chemoprophylaxis trial
26 Jan-9 Feb 88 6-16 Feb 88 15-24 Feb 88 10-24 Apr 88	Napsan, Palawan	Related studies of malaria research
24-29 Jan 88 31 Jan-5 Feb 88 7-12 Feb 88 14-19 Feb 88 6-11 Mar 88 13-17 Mar 88 1-5 May 88	Olongapo City	Blood extraction of hospitality girls for HIV testing
20 Feb-13 Mar 88	Napsan, Palawan	Malaria drug prophylaxis studies
5 Feb-8 Mar 88	Napsan, Palawan	Malaria studies
25 Mar-9 Apr	Napsan, Palawan	Hematology for malaria chemoprophylaxis studies
19-24 Mar 88	Napsan, Palawan	Safety inspection
2-26 Apr 88	Napsan, Palawan	Malaria prophylaxis studies
20-26 Apr 88	Napsan, Palawan	Conclusion of malaria prophylaxis studies
23-26 May 88	Naval Station Subic Bay	Warehouse inventory/fire department inspection
23-27 May 88 26 Jun-1 Jul 88	Subic Bay	Set-up Serum Bank

7-8 Jun 88 28-29 Jun 88 9-10 Aug 88	Sto. Domingo, Nueva Ecija	Collection of culicine mosquitoes for colonization
11-15 Jul 88	Napsan, Palawan	HTLV-1 Research
8-12 Aug 88 16-19 Aug 88 23-26 Aug 88	Olongapo City	DNA Probe for Cervical GC
18-23 Sep 88	Napsan, Palawan	Collection of malaria vectors for genetic studies
11-13 Sep 88	Napsan, Palawan	Survey on existing NAMRU facilities in Palawan for repair and maintenance
5-8 Dec 88	Olongapo City	Collection of pharyngeal isolates
12-13 Dec 88	Angeles City	Collection of pharyngeal isolates

COMMAND FUNDED FIELD TRIPS FOR 1988 JAKARTA DETACHMENT

Dates	Place	Purpose
29 Nov 87 to 3 Jan 88 4 - 16 Jan 88 27 Dec 87 to 31 Jan 88 24 Jan to 6 Feb 88	Jayapura, Arso	Malaria field study
4 - 18 Dec 88	Washington, D.C.	Typhoid DNA probe research project
24 - 28 Nov 88	Yogyakarta	Coordination of JE project
28 Jan to 28 Feb 88	Jayapura	Malaria epidemiology field study

PART IV
DISTINGUISHED VISITORS
AND FELLOWS

DISTINGUISHED VISITORS

1988

LTC Josh Berman	WRAFR/Headquarters
CAPT Thomas L. Clark	Commander Naval Medical Command Pacific Region
LCDR Thomas E. Clendennen	NEPMU-6
Philip D'Ambrosio	Medical Planner and Admin Assistant CINCPACFLT
CAPT Otis P. Daily	Commanding Officer U.S. Naval Hospital Subic Bay
LT J. Christopher Daniel	Flight Surgeon Director, Branch Medical Clinic NAS Cubi Point
CAPT Norman A. Dean	NEPMU-6
Roy Dileo	Uniformed Services University of the Health Sciences
LCDR Russ Ebersole	Stagg Pediatrician U.S. Naval Hospital Subic Bay
LCDR Don Herip	U.S. Naval Hospital Subic Bay
Marc Hester	Uniformed Services University of the Health Sciences
LTC Stephen P. Jones	Chief Med Ops and Exercise Branch CINCPACFLT
LCDR Bruce K. Merrell	NEPMU-6

RADM R.L. Marlor	PACOM/CINCPACFLT
LCDR Barbara O'Hara	
CDR Fred P. Paleologo	Officer in Charge NAMRU-2 Detachment
LT Drew A. Peterson	Flight Surgeon UFA 132 NAS Cecil Field, FL
Mrs. Nicholas Platt and Party	U.S. Embassy, Manila
Dr. William Ferguson Reid	Regional Medical Officer U.S. Embassy Manila
LCDR Leland S. Rickman	Naval Medical Research Institute Bethesda, MD
Dr. Lee Riley	International Health Program Office Center for Disease Control
LT Truman Sharp	Naval Medical Research and Development Command
Catherine Simpson	Uniformed Services University of the Health Sciences
Mr. Roy Tabor	Regional Librarian Wessex, England
Jeff P. Vista	Uniformed Services University of the Health Sciences
David Walker	Uniformed Services University of the Health Sciences

FELLOWS AND TRAINEES

PSMID Fellows

Dr. Danilo M. Menorca	Microbiology Division 16 July 1988 to 1989
Dr. Reynaldo V. Galban	Parasitology Division 2 June 1988 to 1989
Dr. Myrna D. San Pedro	Microbiology Division 1 December 1988 to 1989
Dr. Ma. Eva M. Managuelod	Tropical Medicine Division 14 November 1988 to 1989

Trainees/Externs

Annaliza Andres	Far Eastern University
Dario Cruz Angeles	University of the Philippines
Mary Eileen Batac	Centro Escolar University
Mylene Bautista	Centro Escolar University
Ferdy A. Besana	Centro Escolar University
Maria Gilda Caballero	Centro Escolar University
Ma. Lourdes B. Cendana	University of Santo Tomas
Teresa Maria De Veyra	University of Santo Tomas
June C. Evangelista	University of Santo Tomas
Mari Elvira Herrera	Far Eastern University
Gracelda de Jesus	Lyceum Northwest
Floradema Logronio	Divine Word University (Tacloban)
Razel Lubo	Centro Escolar University

Angelica Magalong	Far Eastern University
Monching Madriaga	Far Eastern University
Nancy Mendoza	Far Eastern University
Susannah O. Mina	Virgen Milagrosa Educational Institute
Fely Nava	Immaculate Conception College
Jesus Ocampo	Far Eastern University
Hazel Sevillaena Oreste	Philippine Women's University
Alicia Rivera	University of Santo Tomas
Emmanuel Rivera	University of Santo Tomas
Marjorie Fortin Sim	Silliman University
Amelita Tiburcio	University of Santo Tomas
Amalia Tiu	Cebu Doctor's College
Sandra Yap	University of Santo Tomas

PART V
PUBLICATIONS

PUBLICATIONS 1988

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PART VI
FUNDED RESEARCH WORK UNITS

FUNDED RESEARCH WORK UNITS

Manila

1498 Work Units

- | | |
|-----------------------|---|
| a. 3M161102.AK211 | Basic studies on infectious diseases of military importance |
| b. 3M463105H29.AA235 | Epidemiology and natural history of HIV infection in military relevant geographic areas |
| c. 3M162770A870.AN221 | Prevention and treatment of infectious diseases of military importance |
| d. 3M162770A870.AQ220 | Technology development on rapid diagnosis of infectious diseases of military importance |
| e. 3M162770A870.AR222 | Threat assessment on infectious diseases of military importance |
| f. 3M161102BS13 | Vector transmission of infectious diseases of military importance |

Independent Research Work Unit

- | | |
|---------------------|---|
| a. MR00001.001.2105 | Evaluation of the ability of some Indonesian Orbi/Orbi-like viral isolates to interfere with the in vivo replication of Japanese encephalitis virus in mosquito cells |
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Jakarta

1498 Work Units

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| a. 3M161102BS13.AK411 | Basic studies on infectious diseases of military importance |
| b. 3M162770A870.AN421 | Prevention and treatment of infectious diseases of military importance |

- c. 3M162770A870.AQ420 Technology development on rapid diagnosis of infectious diseases of military importance
- d. 3M162770A870.AR422 Threat assessment of infectious diseases of military importance
- e. 3M161102BS13.AD410 Vector transmission of infectious diseases of military importance

Independent Research Work Unit

- a. MR00001.001.2107 Evaluation of electrical impedance Plethysmography in the non-invasive physiologic assessment of patients with shock caused by dengue hemorrhagic fever

PART VII
HISTORY OF SAN LAZARO HOSPITAL

HISTORY OF SAN LAZARO HOSPITAL

San Lazaro was founded as a dispensary in Intramuros by Fray Juan Clemente in 1577 and became a hospital in 1578. In 1596 it was taken over by the Hermandad dela Misericordia. It was transferred to a new building on the premises of the Philippine Normal College in 1631, then turned over to the Hermanos de San Juan de Dios in May of 1656. The building was demolished in 1662 for the protection of the city against the invasion of Chinese pirates. Fray Fernando dela Concepcion constructed another building nearby in 1675. A move was made into a building on the present compound in 1784 and enlarged a year later. It was further improved by Fray Felix de Huerta who built a chapel and enclosed the premises with stone wall in 1859. When the Americans took over operations in 1898 it became a Contagious Disease Hospital.

The facility was used primarily for the treatment of leprosy, venereal diseases, diarrhea, smallpox, and bubonic plague at the turn of the twentieth century. The hospital burned in 1903 and was rebuilt a year later with the addition of wooden pavilions to serve as an insane asylum.

In 1921, new buildings were constructed and the older facilities beautified and enlarged. The mental patients were transferred to the National Psychopathic Hospital in 1930 and the leprosy patients remained at the San Lazaro facility. Prisoners of war suffering from malaria and dysentery were admitted in 1942. Hundreds of civilian war casualties were treated during WWII. When peace came, the lepers were moved to the Tala Leprosarium, and the hospital resumed its normal activities, diagnosis and treatment of communicable diseases.

